

# Improving Fifth Grade Students' Math Outcomes Using iSpring Suite 11 Media and Corner Clock Tools

Farida Nur Kumala <sup>1\*</sup>, Muhammad Sulton Mukhlis <sup>1</sup>, Sulistyoningsih <sup>2</sup>

<sup>1</sup>Universitas PGRI Kanjuruhan Malang, Indonesia

<sup>2</sup>Sekolah Dasar Negeri 1 Gadang Malang, Indonesia

\* Author Correspondence

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## Abstract

This research investigates the improvement of mathematics learning outcomes in the angle topic among fifth-grade students at Gadang 1 State Elementary School, Malang City. Preliminary observations indicated that students' learning outcomes were still low, with an average score of 66.35 and a learning mastery rate of 42.30 percent. This condition is attributed to monotonous teaching methods and the absence of interactive media that align with students' characteristics. The purpose of this study is to enhance students' mathematics learning outcomes by utilizing iSpring Suite version 11 media combined with the use of physical angle clocks as learning aids. The research employed a classroom action research design based on the Kemmis and McTaggart model, which was implemented over two cycles within a four-week period. Each cycle comprised the stages of planning, action implementation, observation, and reflection. The participants in this study consisted of 26 students from class V B. Data collection techniques included observation, learning outcome tests, and documentation. The data were analyzed using qualitative descriptive and quantitative methods. The success criteria were defined as a minimum of 85 percent of students achieving scores above the Minimum Mastery Standard of 75. The results demonstrated a progressive increase in student learning outcomes across cycles. In the first cycle, the average score reached 75 with a learning mastery rate of 61.53 percent. In the second cycle, the average score increased to 88.08 with a learning mastery rate of 84.61 percent. These findings indicate that the application of iSpring Suite version 11 media supported by physical angle clocks is effective in improving mathematics learning outcomes.

**Contact :** Corresponding author  e-mail: [faridankumala@unikama.ac.id](mailto:faridankumala@unikama.ac.id)

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## Introduction

The development of information and communication technology today has presented a new paradigm in the world of education, especially in supporting the achievement of 21st century skills that include critical thinking skills, problem-solving, collaboration, creativity, and digital literacy. One of the major challenges faced by Indonesian education is the low achievement of students' mathematics learning outcomes. The Programme for International Student Assessment (PISA) 2018 report shows that Indonesian students' mathematics ability is ranked 73rd out of 79 participating countries with an average score of 379, far below the OECD average of 489 (OECD, 2019). This condition shows the need for innovative, adaptive learning strategies and optimal use of digital technology to improve understanding of mathematics concepts in elementary schools. In line with that, education in the Era Society 5.0 requires the use of internet-based technology, artificial intelligence, and digital devices to improve the quality of human life, including in the field of education. Society 5.0 is the concept of an intelligent society based on cutting-edge technology that places humans as the center of control of the digital system, where technology is used to solve social problems, including improving the quality of educational services (Fukuyama, 2018; Fahmi et al., 2024).

A similar condition occurred at Gadang 1 State Elementary School, Malang City. Based on the results of a preliminary study conducted by researchers in April 2024, it is known that the mathematics learning outcomes of grade V B students in angular materials are still relatively low. The average score of students only reached 66.35 with a learning completion percentage of 42.30%, far below the school's Learning Goal Achievement Criteria which was 75. Interviews with classroom teachers show that the learning method used is still dominated by lectures and assignments without interactive supporting media. This situation has an impact on students' low interest in learning and difficulties in understanding the concept of angles and their application in daily life (Observation Data, 2024). The main problem in learning mathematics of angular materials in the classroom is that students have difficulty determining, measuring, and painting angles, as well as connecting them to real objects around them. One of the reasons is the lack of concrete and interactive media that can visualize angular material in a real and interesting way. This is in line with the findings of Prasetyaningtyas and Priyani (2023) who stated that concrete visual media can help students understand abstract geometric concepts such as angles.

Several international studies show that digital-based learning media can increase students' motivation, interest, and understanding in mathematics learning. According to Fernández-Cézar et al. (2021), digital-based interactive media is able to facilitate abstract mathematical concepts through dynamic visualization that makes it easier for students to understand difficult concepts. In addition, a study by Martín-Gutiérrez et al. (2017) also proves that the use of augmented reality technology in geometry learning can significantly improve the accuracy of spatial comprehension and student learning outcomes. In line with that, Wahyuni et al. (2023) mentioned that technology-based learning media such as iSpring Suite can present material in an interactive and interesting manner without the need for special scripting skills. iSpring Suite 11 is a software that can turn PowerPoint presentations into HTML5-based interactive media or Android applications, making it easier for students to learn independently

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anytime and anywhere (Nugraha, 2023). In addition, research by Yuliana et al. (2023) and Batubara (2021) also showed that the iSpring Suite media is effective in increasing interest and learning outcomes in mathematics thanks to its interactive and accessible features.

Although various studies have proven the effectiveness of iSpring media in digital learning, there have not been many studies that have specifically combined it with concrete manipulative tools such as corner clock media in the context of mathematics learning in elementary schools. Hasanah and Rabbani (2023) only use corner clock media in the Problem-Based Learning model without integrating interactive digital media. In fact, according to Sasahan et al. (2017), the combination of digital media with concrete tools can increase learning motivation as well as a more comprehensive understanding of mathematical concepts because it accommodates the visual, kinesthetic, and digital-native needs of elementary school students. Therefore, this research is needed to answer this gap by applying iSpring Suite 11 media assisted by corner clocks in learning mathematics of angular materials.

This research is important because it can make a theoretical and practical contribution to the development of digital technology-based mathematics learning strategies combined with concrete tools. Theoretically, this study expands the study on the effectiveness of iSpring Suite 11 media combined with corner clocks to improve mathematics learning outcomes in elementary schools, especially in corner materials. Practically, the results of this study can be a reference for teachers in designing interactive visual learning that is contextual and in accordance with the characteristics of current elementary school students (Sumargono et al., 2019; Kurniasih, 2016). Based on this description, this study aims to improve the mathematics learning outcomes of students in grade V B Gadang 1 State Elementary School, Malang City through the application of iSpring Suite 11 media assisted by angle clock media on angular materials and to determine the effectiveness of this media in helping students understand the concept of large angles, types of angles, and how to measure them appropriately.

## Method

This study uses the Kemmis and McTaggart spiral model Classroom Action Research method which aims to improve the process and learning outcomes of mathematics students in grade V B Gadang 1 State Elementary School, Malang City. The subjects of this study were 26 students, consisting of 13 male students and 13 female students. The research was carried out during the even semester of the 2024/2025 academic year, precisely in February-March 2025. The action process is carried out collaboratively between researchers and classroom teachers, starting from the preparation of learning tools, the implementation of learning, observation of student involvement, to reflection on the results of actions. The research instruments include student involvement observation sheets, learning outcome test questions, and documentation. The learning outcome test questions consist of multiple choice and descriptions prepared based on the Basic Competency indicators 3.6 and 4.6 of the Independent Curriculum, validated by two expert lecturers and one classroom teacher, and analyzed using the Content Validity Index (CVI) with valid criteria if the  $CVI \geq 0.80$ . The reliability test is carried out with the Alpha Cronbach test through instrument tests in other classes with reliability criteria if the coefficient value  $\geq 0.70$ . The research procedure consists of two cycles, each meeting lasting  $2 \times 35$  minutes,

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which includes the stages of planning, implementation of actions, observation, and reflection. The planning stage includes the preparation of lesson plans, the development of iSpring Suite 11 media, the creation of corner clock media, and the preparation of observation and test instruments. The implementation of actions was carried out by delivering angular material using interactive media, while observation recorded student involvement and media effectiveness. Reflection is carried out with the teacher to evaluate the success of the action and determine improvement in the next cycle. The data were analyzed in a qualitative descriptive manner to describe student involvement, teacher activities, and the effectiveness of media during learning, as well as quantitative descriptive to calculate the improvement in student learning outcomes through the calculation of average scores, classical completeness percentages, and individual completeness. Students' scores were calculated using the formula from Arikunto (2010b), while classical completeness was calculated using the Sudijono (2006) formula, with a completeness criterion of at least 85% of students obtaining a score of  $\geq 75$  (Prayogi & Kurniawan, 2024). This research is declared successful if the average learning outcome score is at least 75 and the percentage of classical completeness is at least 85%. The entire research process has obtained permission from the head of Gadang 1 State Elementary School, Malang City and pays attention to the ethical principles of educational research by maintaining the confidentiality of student identities, the consent of teachers, parents, and ensuring that actions do not harm students physically or psychologically (Sugiyono, 2022).

## Results and Discussion

### Results

This class action research was carried out at Gadang 1 State Elementary School, Malang City with 26 students in class V B, consisting of 13 male students and 13 female students. Based on the results of initial observations, problems were found in the form of low learning outcomes in mathematics of angular material with an average score of 66.35 and learning completeness of only 42.30%. This condition is influenced by learning methods that are still dominated by lectures, questions and answers, and assignments without the support of interactive learning media, so that students feel bored and have difficulty understanding the concept of the angle visually and contextually. This is strengthened from the results of the pre-cycle, where out of 26 students, only 11 students (42.30%) have achieved complete learning, while 15 students (57.69%) have not completed their studies.

After the first cycle action was carried out by applying the iSpring Suite 11 media, student learning outcomes increased. The average student score rose to 75, with a percentage of learning completeness of 61.53% or as many as 16 students have completed. However, there are still 10 students (38.46%) who have not reached the Learning Goal Achievement Criteria. The observation results showed that students were very enthusiastic about using the iSpring Suite 11 media, but they found obstacles in the form of navigation difficulties due to the unavailability of the back button to the initial menu, and students were still confused about applying the concept of angle in the context of daily life.

Improvements were made in cycle II by improving the iSpring Suite 11 media and adding corner clock media as a concrete aid. The results of the evaluation in cycle II showed a significant increase. The average student score increased to 88.08, with the percentage of learning completeness reaching 84.61% or as many as 22 students were declared complete. Only 4 students (15.38%) remained who had not reached completion. In general, this data shows a trend of increasing learning outcomes from pre-cycle to cycle I and to cycle II, both in terms of average score and percentage of learning completion.

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This data also shows that learning efforts using iSpring Suite 11 media assisted by corner clocks are effective in improving student learning outcomes in corner materials.

## Discussion

The increase in student learning outcomes that occurred from pre-cycle to cycle II was due to the success of iSpring Suite 11 media in presenting mathematics materials interactively and visually. Multimedia-based media such as iSpring has been proven to be able to attract students' attention, make it easier to present abstract concepts more concretely, and provide independent learning opportunities through interactive features available on students' gadgets (Nugraha, 2023). In addition, the addition of corner clock media in cycle II also plays an important role in helping students visualize the concept of large angles and types of angles in daily life. This concrete media provides a meaningful learning experience and according to contextual learning principles, where students build an understanding of mathematical concepts through direct experience (Sanjaya, 2014). The increase in learning outcomes by 19.23% from pre-cycle to cycle I, and by 23.08% from cycle I to cycle II shows the real impact of the integration of the two media.

These findings are in line with the research of Sasahan et al. (2017) which states that the iSpring Suite media is effective as an independent learning resource, as well as the research of Mayasari et al. (2019) which shows that the angle clock media is able to increase the interest in learning and understanding of geometry concepts in elementary school students. In addition, the results of this study are also consistent with the principles of Mayer's Multimedia Learning Theory (2009), which states that interactive visual media can increase the attractiveness, attention, and understanding of students' abstract concepts through dual-channel processing: visual and verbal. This finding is also in line with the research of Nurpratiwiningsih et al. (2021) which proves that the angle clock media is effective in improving the understanding of concepts and learning outcomes of elementary school students. However, unlike the Ramadhan (2021) study which found that interactive media without concrete tools is less optimal for geometry materials, this study shows optimal effectiveness precisely when digital media is combined with concrete media.

This research makes an important contribution to the development of digital-based mathematics learning media and concrete tools in elementary schools. Practically, the results of this research can be used as a reference for teachers to design technology-based learning that is integrated with concrete media to facilitate the understanding of geometry concepts. However, this study has limitations, namely it is only carried out in one class and on angular material only in a span of two months. Therefore, the generalization of the results of this study needs to be done carefully. It is suggested that further research can test the effectiveness of iSpring Suite 11 media with the help of other concrete media on different math materials and in schools with more varied student characteristics.

## Conclusion

Based on the results of the class action research carried out at Gadang 1 State Elementary School, Malang City, it can be concluded that the application of iSpring Suite 11 media assisted by the corner clock media has proven effective in improving mathematics learning outcomes in

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the corner material of grade V B students in the even semester of the 2024/2025 school year. There was a significant increase in both the average learning outcome score and the percentage of student learning completeness from pre-cycle, cycle I, to cycle II. These findings show that the integration of interactive digital media with concrete manipulative tools is able to strengthen students' understanding of geometry concepts visually, contextually, and applicatively. The results of this study provide practical contributions for teachers in designing mathematics learning that is more interesting, interactive, and easy to understand, while offering an alternative learning approach that can be applied to other geometry materials in elementary schools. For future research development, it is recommended to conduct follow-up studies using experimental or quasi-experimental designs with control groups, in order to test the effectiveness and generalization of these findings in a broader context, both at different levels, regions, and subject matter. In addition, the results of this study have policy implications for decision-makers in the field of basic education to encourage the integration of interactive digital media and concrete manipulative tools in the mathematics learning process in elementary schools, as well as provide continuous training for teachers in the development of digital learning media based on educational technology.

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## Authors' Note

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

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